

Contents

Part I Network Structure

Tomography and stability of complex networks <i>Tomer Kalisky, Reuven Cohen, Daniel ben-Avraham, Shlomo Havlin</i>	3
Spectral analysis of random networks <i>Sergei N. Dorogovtsev, Alexander V. Goltsev, José F. F. Mendes, Alexander N. Samukhin</i>	35
A tractable complex network model based on the stochastic mean-field model of distance <i>David J. Aldous</i>	53
The small world phenomenon in hybrid power law graphs <i>Fan Chung, Linyuan Lu</i>	91
The optimal path in an Erdős-Rényi random graph <i>Lidia A. Braunstein, Sergey V. Buldyrev, Sameet Sreenivasan, Reuven Cohen, Shlomo Havlin, H. Eugene Stanley</i>	107
Clustering in complex networks <i>Gábor Szabó, Mikko Alava, János Kertész</i>	119
Equilibrium statistical mechanics of network structures <i>Illés Farkas, Imre Derényi, Gergely Palla, Tamás Vicsek</i>	143
Information theory of complex networks: on evolution and architectural constraints <i>Ricard V. Solé, Sergi Valverde</i>	169

Part II Network Dynamics

Extremal properties of random structures <i>Eli Ben-Naim, Paul L. Krapivsky, Sidney Redner</i>	191
--	-----

VIII Contents

On the analysis of backtrack procedures for the colouring of random graphs <i>Rémi Monasson</i>	215
Small-World synchronized computing networks for scalable parallel discrete-event simulations <i>Hasan Guclu, György Korniss, Zoltán Toroczkai, Mark A. Novotny</i>	235
Critical phenomena in a small world <i>Matthew B. Hastings, Balázs Kozma</i>	257
Attacks and cascades in complex networks <i>Ying-Cheng Lai, Adilson E. Motter, Takashi Nishikawa</i>	279

Part III Information Networks & Social Networks

Scholarly information network <i>Paul Ginsparg</i>	293
Who is the best connected scientist? A study of scientific coauthorship networks <i>Mark E. J. Newman</i>	319
Information dynamics in the networked world <i>Bernardo A. Huberman, Lada A. Adamic</i>	353
Emergence of complexity in financial networks <i>Guido Caldarelli, Stefano Battiston, Diego Garlaschelli, Michele Catanzaro</i> 381	
Topology, hierarchy, and correlations in internet graphs <i>Romualdo Pastor-Satorras, Alexei Vázquez, Alessandro Vespignani</i>	407
Classes of the shortest pathway structures in scale free networks <i>Kwang-Il Goh, Eulsik Oh, Chul-Min Ghim, Byungnam Kahng, Doochul Kim</i> 423	

Part IV Biological Networks

Characteristics of biological networks <i>Albert-László Barabási, Zoltán N. Oltvai, Stefan Wuchty</i>	447
Boolean modeling of genetic regulatory networks <i>Réka Albert</i>	463
Theoretical neuroanatomy: analyzing the structure, dynamics and function of neuronal networks <i>Anil K. Seth, Gerald M. Edelman</i>	487